

HAWAII, ISLAND OF MAUI

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16599500 OPANA TUNNEL AT KAILIILI

LOCATION.--Lat 20°51'04", long 156°16'17", Hydrologic Unit 20020000, on left bank at tunnel outlet, 0.3 mi north of Kailili, and 2.7 mi east of Makawao.

PERIOD OF RECORD.--May 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,340 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Phillip Teeters. Records fair. Tunnel diverts water from Opana Gulch for agricultural and domestic use in the Kokomo, Makawao, and Pukalani areas.

AVERAGE DISCHARGE.--37 years (water years 1966-2002), 3.17 ft³/s (2,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18 ft³/s, March 31, 1982, April 12, 1986, March 23, 1994; minimum daily discharge, 0.11 ft³/s, November 5-10, 1973, October 5, 6, 25, 26, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 14 ft³/s, Dec. 13; minimum daily discharge, 0.38 ft³/s, Sept. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.84	5.2	1.8	3.2	4.7	6.5	2.7	1.2	0.65	1.0	1.0	1.7
2	1.5	4.2	1.7	2.8	4.0	5.9	2.5	0.95	0.65	0.81	0.89	1.3
3	0.70	3.2	1.9	3.7	3.6	7.3	2.4	0.85	0.60	0.70	0.81	4.2
4	0.71	6.7	3.1	2.7	3.3	6.2	2.3	1.7	0.59	0.70	0.93	3.8
5	3.3	9.1	4.6	2.5	3.1	9.0	2.2	1.4	0.55	0.59	0.87	1.6
6	1.4	7.8	2.3	2.4	3.0	11	2.1	9.4	0.55	0.57	0.77	1.2
7	7.4	5.6	2.8	2.4	2.7	7.1	2.2	5.2	0.54	0.90	2.2	1.7
8	5.6	8.2	9.2	2.1	4.1	5.3	2.0	2.5	0.53	1.6	1.5	3.8
9	4.3	7.6	9.0	2.1	4.0	4.7	1.9	1.8	0.50	1.1	2.3	2.8
10	5.6	5.4	7.5	3.5	3.4	4.1	1.7	1.6	0.52	1.4	1.8	2.0
11	7.9	4.3	8.5	2.4	3.8	3.8	1.6	1.3	0.60	1.0	1.2	1.5
12	4.2	3.5	12	2.0	4.8	3.5	1.5	1.1	0.69	0.73	1.1	1.1
13	2.5	3.1	14	1.9	9.3	3.6	1.5	4.8	0.73	0.56	0.93	0.96
14	2.0	2.6	9.5	1.8	8.0	3.3	1.4	4.2	0.77	0.47	0.91	0.86
15	1.7	2.5	8.1	1.6	6.2	3.1	1.3	2.0	2.9	0.44	0.81	0.89
16	1.8	2.3	7.1	1.5	4.6	3.2	1.3	1.5	1.3	0.43	0.70	0.98
17	1.6	2.1	8.4	5.2	3.9	10	1.6	1.2	1.7	0.44	0.65	0.90
18	1.3	2.0	8.9	11	3.6	11	1.3	2.0	1.3	0.44	0.71	0.76
19	1.1	1.9	9.4	13	3.4	7.5	1.2	2.8	1.0	0.50	0.79	0.67
20	1.1	1.8	7.7	12	4.2	5.3	1.1	2.2	0.80	0.48	0.78	0.64
21	1.5	1.6	7.0	8.3	3.7	4.4	1.1	1.7	0.69	0.99	0.64	0.57
22	1.6	1.5	6.4	6.6	3.2	4.0	1.1	1.3	0.63	5.3	0.57	0.52
23	1.1	1.5	6.4	5.6	3.4	3.7	1.0	1.2	0.51	1.9	0.80	0.47
24	0.96	1.4	6.2	4.9	9.7	3.7	1.0	1.1	0.46	1.1	1.8	0.44
25	0.84	1.3	5.1	4.4	11	3.5	0.93	0.97	0.44	1.4	0.99	0.44
26	0.76	1.2	4.6	4.2	12	3.3	0.92	0.92	0.54	4.8	0.73	0.42
27	0.95	5.7	4.2	4.2	8.1	3.1	0.86	0.86	0.65	5.7	0.93	0.39
28	11	6.7	3.8	3.9	7.0	3.1	0.94	0.81	0.51	2.6	3.8	0.38
29	9.3	2.5	3.5	8.2	--	2.8	1.7	0.77	0.43	1.9	2.7	0.38
30	6.9	1.8	3.2	7.5	--	2.8	2.6	0.70	0.62	1.5	3.6	0.39
31	4.7	--	4.0	5.8	--	2.7	--	0.66	--	1.2	3.4	--
TOTAL	96.16	114.3	191.9	143.4	145.8	158.5	47.95	60.69	22.95	43.25	41.61	37.76
MEAN	3.10	3.81	6.19	4.63	5.21	5.11	1.60	1.96	0.77	1.40	1.34	1.26
MAX	11	9.1	14	13	12	11	2.7	9.4	2.9	5.7	3.8	4.2
MIN	0.70	1.2	1.7	1.5	2.7	2.7	0.86	0.66	0.43	0.43	0.57	0.38
AC-FT	191	227	381	284	289	314	95	120	46	86	83	75

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)

MEAN	1.89	3.35	4.01	3.69	3.70	4.64	5.04	3.43	2.13	2.55	2.13	1.53
MAX	5.40	7.97	9.19	7.55	9.04	11.1	9.35	7.42	6.38	8.17	4.98	5.69
(WY)	1984	1968	1971	1989	1969	1982	1968	1987	1997	1997	1969	1992
MIN	0.14	0.25	0.65	0.22	0.36	0.51	0.27	1.28	0.50	0.40	0.19	0.15
(WY)	1985	1992	1977	1977	1978	1983	1992	1992	1999	1981	1974	1984

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1965 - 2002

ANNUAL TOTAL	812.20	1104.27	
ANNUAL MEAN	2.23	3.03	3.17
HIGHEST ANNUAL MEAN			5.34
LOWEST ANNUAL MEAN			1.45
HIGHEST DAILY MEAN	14	Dec 13	18 Mar 31 1982
LOWEST DAILY MEAN	0.21	Jul 17	0.11 Nov 5 1973
ANNUAL SEVEN-DAY MINIMUM	0.25	Jul 5	0.11 Nov 4 1973
ANNUAL RUNOFF (AC-FT)	1610	2190	2300
10 PERCENT EXCEEDS	5.7	7.5	7.8
50 PERCENT EXCEEDS	1.2	1.9	2.2
90 PERCENT EXCEEDS	0.38	0.61	0.39

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